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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,362	11/17/2003	Yoshikazu Nagamura	67161-130	1874

7590 06/15/2006

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600 13th Street, N.W.  
Washington, DC 20005-3096

EXAMINER
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ROSASCO, STEPHEN D

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/714,362

Applicant(s)

NAGAMURA ET AL.

Examiner

Stephen Rosasco

Art Unit

1756

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 4-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1/4/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### Detailed Action

In response to the IDS and Amendment of 3/29/06, the examiner withdraws the previous office action rejections and includes a new rejection here.

The disclosure is objected to because of the following informalities: the abstract line 2, "halt tone mask".

Appropriate correction is required.

Remarks – the applicant has requested rejoinder of the remaining claims in the event that the application is allowed. However claim 11 must be amended to conform with the mask description of claim 1.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samsung Corporation (Application No. 1996-0031200) in view of Nakao (5,858,625).

Samsung Corporation teaches a method of manufacturing a transmissivity - adjusting mask comprising:

a first step of applying a transmissivity-adjusting material and a shading material onto a quartz substrate in order, and thereafter performing patterning to form a transmissivity-adjusting film and a shading pattern;

a second step of applying a photoresist onto the entire surface of the resultant substance on which the shading pattern is formed, and forming a photoresist pattern to expose only a specified portion of said shading pattern;

a third step of selectively removing said exposed shading pattern;

and a fourth step of removing said photoresist pattern.

The teachings of Samsung Corporation differ from those of the applicant in that the applicant teaches that the semitransparent portion is formed adjacent the shading portion with a particular direction relationship.

Nakao teaches the treatment of defects in phase shift masks which includes the use of a semi-light shielding film (same as the claimed shading film) and attenuated transmitting areas. The arrangement of the respective areas and the effect of this on the relative transmission through the mask is also taught. In particular in claim 1 there is a substrate including a first light transmitting portion,

a semi-light shielding film which is located at an interface between said adjacent first and second light transmitting portions and formed in a part of said first and second light transmitting portions,

said first light transmitting portion includes a first transmitting region and a first attenuated transmitting region in which said semi-light shielding film is formed,

light intensity of exposure light transmitted through said first transmitting region is greater than that of the exposure light transmitted through said first attenuated transmitting region, said second light transmitting portion includes a second transmitting region and a second attenuated transmitting region in which said semi-light shielding film is formed, and light intensity of exposure light transmitted through said second

transmitting region is greater than that of the exposure light transmitted through said second attenuated transmitting region.

Nakao also teaches the specific placement of the regions in order to give the desired optical transmission.

The use of the semitransparent portion is to adjust the amount of light that is needed to correct for the error in the exposure in the area of the clear defect. It is known in the art that uses Optical Proximity Correction with semitransparent masks to incorporate the use of semitransparent features in conjunction with the main pattern in order to produce the desired exposure effect. The prior art teaches the importance of having the transmission adjusting feature proximate to the main pattern, although it may not designate the perpendicular direction specifically.

Therefore, it would have been obvious to one having ordinary skill in the art to take the teachings of Samsung Corporation and combine them with the teachings of Nakao and a knowledge of OPC design in order to make the claimed invention because the incorporation of a semitransparent feature that extends in a perpendicular direction from the main pattern would be an obvious design in that this is the region where the optical effect of the interference of light with the main pattern is to be corrected.

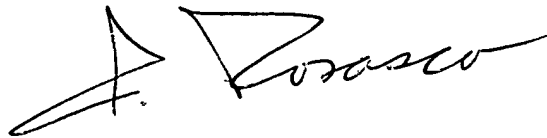
Applicant's arguments with respect to claims 1-3 have been considered but are moot in view of the new ground(s) of rejection.

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*Conclusion*

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Stephen Rosasco whose telephone number is (571) 272-1389. The Examiner can normally be reached Monday-Friday, from 8:00 AM to 4:30 PM. The Examiner's supervisor, Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'S. Rosasco', with a stylized initial 'S'.

S. Rosasco  
Primary Examiner  
Art Unit 1756

S. Rosasco  
06/08/06